
Study to assess the compensation and skills of medical library professionals relative to information technology professionals*

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Purpose: The study seeks to determine how medical library professionals performing information-technology (IT) roles are compensated and how their positions are designed compared to information technology staff in their institutions.

Methods: 550 medical library directors in hospital and academic medical libraries were surveyed. The data was then compared to survey data from other compensation studies of the IT industry.

Results: There is a gap in compensation between medical library professionals and IT professionals performing similar functions using information technology. Technology-intense library jobs are compensated at higher levels than more traditional jobs.

Conclusions: To compete with IT salaries, managers of medical library professionals will need to be ever more cognizant of the employment practices of IT professionals in nonmedical library disciplines. It is typically in the medical library's best interest to ensure that IT-related jobs, accountabilities, and capabilities of the medical library are known and understood by others, especially in the human resources and information technology staff departments.

INTRODUCTION

Medical library professionals are partners on the health care team, playing vital roles in the delivery of health care, the conduct of medical research, and the education of health professionals. Medical library staff members are also instrumental in providing high-quality health information to the general public. Medical librarians are leaders in applying and promoting technology for the dissemination of information and the development of knowledge. Pioneers in the use of data processing, on-line interactive searching, electronic mail, Internet ac-

cess, and high-performance computing and communications, they are currently using their expertise to enhance access to health-related information on the Web.

Given this background, medical library jobs require skills somewhat similar to information technology (IT) positions found in the general marketplace. The objectives of this study were to:

- provide an analysis of the job content and job designs of medical library positions compared to the content and design of information-technology positions in general industry
- provide a complete analysis of the compensation of medical library positions compared to the compensation of the appropriate information-technology positions in general industry

* This study was funded by the Medical Library Association.

■ identify common issues impacting medical libraries' abilities to effectively attract, retain, and compensate medical library staff with IT-related backgrounds

This study provides data from both the hospital library and the academic health sciences library settings. The study provides data that assists in determining the value placed on information technology functions through compensation. It shows whether librarians performing IT roles are compensated below, equal to, or above IT staff performing the same roles. The ultimate goal is to have data to support appropriate salaries for librarians. In turn, these salaries will help attract and retain employees in those "hard to fill and keep" IT positions.

The Medical Library Association (MLA) has already taken steps toward this goal. In 1997–1998, the MLA Status and Economic Interests of Health Sciences Library Personnel Committee (SEIC) oversaw the development of sample job descriptions for positions in medical libraries and information centers. Additionally, since 1983, MLA has conducted periodic salary surveys of its medical librarian members. The sixth triennial salary survey conducted in 1998 is available on the members portion of the MLA Website.[†]

METHODOLOGY

Staff from the Hay Group and MLA used the following approach in conducting this project.

Project planning/data collection

The Hay Group and MLA met to plan the project, roles, accountabilities, and timetables, so that there was consensus on the scope of the project as well as the project plan. In order to support a comprehensive data submission kit and analysis, we collected background materials from MLA to support the study, including:

- previous and current compensation surveys
- available information technology surveys
- current medical library position descriptions

Job understanding

A critical step in determining appropriate comparisons of medical library positions with information-technology positions was gaining a detailed understanding of the content of these jobs. In this phase, we developed survey job models for fourteen core medical library positions. We used current MLA survey job descriptions as a basis for these descriptions. Full descriptions for the fourteen model positions are provided in Appendix A. These model positions were:

1. director of medical library
2. associate/assistant director

3. head of access services
4. head of collection development
5. head of reference
6. reference librarian
7. head of educational services
8. education services librarian
9. head of resource center
10. head of technical services
11. head of information systems
12. systems librarian
13. Web services manager
14. catalog librarian

Development of survey data submission document

Using these job models, we developed a data submission document that gathered relevant information concerning compensation, job design, and work environment issues for IT-oriented medical library positions. A section of the data submission document is represented in Appendix B. Data collected included:

- demographic information (e.g., type of organization, size of organization, location, employee education level, etc.)
- compensation-related information (e.g., actual base salary paid as of March 2000)
- job design information (e.g., percent of time spent in IT-related work, accountability for managing people, typical functional responsibilities of positions, typical self-reported job titles)
- nature of information systems support (e.g., in-house, parent organization, external contractors, etc.)
- attraction, retention, and compensation issues related to staff with IT-related skill sets
- typical education and skill backgrounds of medical library employees

The data submission document was then sent to 550 prospects from a mailing list provided by MLA. These surveys were directed to medical library directors in hospitals and academic medical centers.

Analysis of survey results

All data were analyzed to determine compensation levels and job designs for the fourteen model jobs. In addition, general data trends were determined for other sections of the survey. In addition to reporting arithmetic means, several other measures of compensation data (i.e., percentiles) were reported for the fourteen core medical library positions covered in the survey to provide an understanding of the variance (or dispersion) in compensation paid. For example, P25 was the twenty-fifth percentile or that point where 25% of participants were paid less than the reported value and 75% were paid higher than the reported value. A small number of significant outliers (i.e., compensation with substantial variance from central tendency) were excluded from the analysis. Excluding

[†] Complete 1998 salary survey findings are available from the Medical Library Association by calling 312.419.9094 or at www.mlanet.org/members/98salsur/.

outliers helped improve the analysis of the data. To ensure confidentiality of results, only aggregate data were reported. No aggregate data were reported if less than six organizations provided data.

Comparison to information technology (IT) positions

Results of the compensation survey were then compared to several existing industry surveys of compensation paid to IT professionals, both inside and outside the health care industry. The purpose of this analysis was to determine the degree to which IT-oriented medical library jobs were paid similar amounts as information technology jobs in the health care industry and in general industry. If the hypothesis proved true, we could determine what specific positions in the information technology job family were the most appropriate matches to medical library positions.

Documentation and reporting of results

Our findings from all phases of this work were documented and then presented to the MLA project team and at the MLA annual meeting in May 2000. In addition, survey results were reported back to those organizations providing data for the study as well as on the members only portion of the MLA Website.‡

FINDINGS

Participant demographics

Surveys were sent to 550 prospects from a mailing list provided by MLA. These surveys were addressed primarily to medical library directors in hospitals and academic medical centers. The Hay Group received responses from 179 organizations for a return rate of 33%. These participants were representative of all U.S. geographic regions. A listing of the participating organizations is provided in Appendix C.

The survey had strong representation from both the hospital sector (55% of participants) and the academic medical center sector (37% of participants). The remaining 8% of participating organizations were distributed among VA hospitals and other organizations not cleanly fitting the categories noted above (e.g., National Institutes of Health, Walter Reed Institute of Research, etc.).

In most compensation-related surveys, organization size typically has a direct relationship on compensation levels. Organization size generally correlates with complexity, scope, and impact. Therefore, tracking the relative size of these organizations is important. We tracked this by the number of full-time equivalent em-

ployees (FTEs). Medical libraries in academic medical centers are generally much larger than those in hospitals. An academic medical center library staff of forty-five employees or greater is considered large, while a hospital library staff of six employees or greater is considered large.

Nature of information systems support

One factor that most likely had an impact on the complexity of job design in medical libraries, and subsequently on compensation, was the amount of support provided by a hospital or academic medical center's IT department to the medical library. Our assumption was that the more IT-oriented and staffed a medical library was, the less reliant the medical library would be on the organization's IT department or on external contractors.

We found that most medical libraries received substantial IT support from their organization's IT departments. In response to the question "Are medical library information systems typically supported by the parent organization IT department?," 62% of all respondents answered yes, with 77% of hospitals and 46% of academic medical centers answering in the affirmative. Core IT services such as database support, network administration, electronic mail, telecommunications, applications programming, systems operations, hardware support, and Internet support were largely provided by the institutions' IT departments. The data also suggested that there was relatively more self-sufficiency (i.e., less reliance on IT function) in IT-related matters in academic medical centers than in hospitals.

Furthermore, relatively few participating organizations outsourced IT work. Of all participants, 19% outsourced some of their IT work. The percentage of academic medical centers outsourcing IT work was higher than hospitals, at 23% and 17%, respectively. The most common type of outsourced work included programming, applications design, and IT training (software, office support, etc.).

We also asked participants whether the medical library supported non-medical library information systems for the organization. Of all participants, 26% supported such systems for the entire institution, with 36% and 21% of academic medical centers and hospitals supporting these systems, respectively. The most common types of systems that the medical library supported for the entire organization included:

- electronic reserve system
- information database support
- instructional media support
- integrated library system support
- Web-based education support or development
- Web-based training
- Website development

Areas of the organization other than the medical li-

‡ Survey results may be viewed at www.mlanet.org/members/Hay_Study/.

brary or the IT department had primary accountability for several types of IT work. Some of the most frequently mentioned included the following:

- instructional media support: accountability of the audiovisual department
- integrated library system support: university libraries
- IT training (software, office support) and Web-based education support or development and Web-based training: education department
- telecommunications: telecommunications department
- telemedicine and telemedicine technical support: various departments
- Website development: marketing department

Survey compensation data tables

Compensation data tables were created to report the following compensation information for the fourteen core medical library positions covered in the survey:

- Number of reported organizations and incumbents.
- Actual base salary paid (P25, P50, P75, average): All data were as of March 2000. Only base salary data were provided. We assumed that the prevalence of variable or incentive compensation (i.e., outside of the base salary program) was low, and, therefore, it was not analyzed as part of this study.
- Median percent of time spent in IT-related work: Participants were asked the percent of time spent in IT-related work. This was intended to gauge the concentration of IT-related activities that could have a bearing on compensation.
- Average base salary paid by time spent in IT-related work: Per the previous item, median percent of time reported for *all* participants was 25%. This breakout identified compensation differences for those jobs that had a light versus heavy concentration of IT-related work. We defined light concentration as less than 25% time spent and heavy concentration as greater than 25%.
- Percentage of jobs managing people: Management of people was another dimension of job design that might influence the level of pay. Here, we tracked the prevalence of those jobs managing people.
- Typical functional responsibilities of positions: A checklist of IT-related accountabilities was provided for each position. Here the prevalence of functional responsibilities was summarized.
- Typical self-reported job titles: Typical organizations' self-reported job titles were provided here. An example of one of the compensation data tables is given in Table 1.

Survey compensation and job design findings

There were two key findings resulting from the analysis of compensation data.

- In general, academic medical centers paid higher than hospitals for *similarly titled jobs*. Differences in pay

between academic medical centers and hospitals was likely attributed to differences in average size and complexity between the two types of organizations. When controlling for *job size* differences (i.e., job requirements and accountabilities), compensation differences between hospitals and academic medical centers were minimal.

- As mentioned above, the median percent of time spent on information technology-related work was 25% for most medical library positions. Jobs with a heavy IT emphasis (more than 25% of time spent) were typically paid more than jobs with a lighter IT emphasis in larger, more complex organizations. This difference was more pronounced in academic medical centers, where jobs with a heavy IT emphasis were paid approximately 4% higher than jobs with a lighter IT emphasis. This difference was also more significant in larger institutions than smaller ones, where heavy-emphasis IT jobs in larger academic medical centers (i.e., medical library staff is 45 employees or greater) were paid 11% higher than light-emphasis IT jobs in these same size medical centers. In the largest hospital libraries (i.e., staffs of 6 employees or greater), the difference in compensation between light and heavy IT orientation was 17%. Two model jobs, head of information systems and systems librarian positions spent approximately 95% of their time on IT-related work. Compensation for these two positions also generally exceeded the compensation paid to other similar size medical library jobs.

Comparison of compensation for health-care IT jobs and medical library jobs

As part of this study, we also collected health-care, information-technology compensation data for twenty-two model jobs from two survey sources: a Watson Wyatt [1] and a William M. Mercer [2] survey of IT compensation. A list of these twenty-two model jobs is given in Table 2. We also examined general industry, information-technology compensation data to illustrate the relationship between health care and general industry pay levels using a Hay Group survey of IT compensation in general industry [3]. All data were projected to March 1, 2000, to allow for timely comparisons to the medical library survey compensation information.

In comparing the compensation of medical library jobs to IT jobs, it was difficult, if not impossible, to undertake such an analysis on a *job title match* basis. To provide relevant comparisons across surveys, we applied the Hay Group's proprietary job evaluation methodology, the Hay Guide Chart Profile Method of Job Evaluation, to both the medical library and information technology survey jobs. This methodology allowed for direct, appropriate comparisons in compensation between jobs using a *common basis of job content* as expressed in job content points or job grade. This

Table 1
Systems librarian

Position information	No. of organizations	No. of incumbents	Base salary				Median time in IT work	Average base salary by time in IT work		% of jobs managing people
			P25	P50	P75	Average		Light	Heavy	
All participants	42	50.8	\$32,000	\$38,000	\$45,000	\$39,934	95%		\$41,078	24%
Hospitals										
All hospitals	9	9	\$23,250	\$34,000	\$38,375	\$32,583	50%		\$35,100	11%
1–2 medical library staff (FTEs)	2	2								
3–5 medical library staff (FTEs)	4	4								
6 + medical library staff (FTEs)	3	3								
Academic medical centers										
All academic medical centers	29	34.8	\$32,748	\$36,600	\$43,892	\$40,066	98%		\$40,855	28%
1–25 medical library staff (FTEs)	7	8	\$32,500	\$36,600	\$44,488	\$44,496	83%		\$47,496	29%
26–45 medical library staff (FTEs)	11	11	\$33,000	\$41,200	\$47,150	\$40,132	100%		\$38,917	18%
45 + medical library staff (FTEs)	8	10	\$32,750	\$37,648	\$40,425	\$37,045	90%		\$39,295	38%
Other	3	3								
Functional responsibility				Primary		Contributory			No response	
Computer help desk				33%		29%			38%	
Desktop applications support				45%		36%			19%	
Electronic mail support				21%		31%			48%	
Electronic reserve system				5%		31%			64%	
Hardware support				43%		43%			14%	
Information database support				38%		40%			21%	
Institutional database support				7%		26%			67%	
Instructional media support				5%		43%			52%	
Integrated library system support				43%		36%			21%	
Internet support				26%		50%			24%	
IT training (software, office support)				26%		29%			45%	
Network administration				38%		31%			31%	
Programming or applications design				17%		24%			60%	
Systems operations				38%		24%			38%	
Telecommunications				0		29%			71%	
Telemedicine				0		10%			90%	
Telemedicine technical support				0		10%			90%	
Web-based education support or development				7%		33%			60%	
Web-based training				10%		36%			55%	
Website development				12%		40%			48%	
Other				0		0			100%	

Typical titles for positions matched to this job: systems administrator, systems specialist, computer specialist, computer systems librarian, senior library clerk, technical specialist, LAN specialist, medical librarian, electronic librarian, medical library coordinator.

provided an ability to compare pay levels across very different jobs of similar “size.” The Hay Guide Chart Profile Method of Job Evaluation is the most widely used method of job content measurement in the world today. It is based on psychological scaling techniques and is proven to be of practical value in a wide range of business sectors, including health care and information-technology sectors.

Essentially, the evaluation process measures and assigns values to each position based on the job’s requirements for each of the following three factors:

■ *Know-how* refers to the knowledge required to do the job well. It includes the depth or breadth of skills and technical knowledge gained through experience or ed-

ucation, as well as the human relations skills and the ability to manage work or people effectively.

■ *Problem solving* refers to the nature and complexity of problems and opportunities faced in performing the job. This includes the amount of thinking required by the job and the difficulty of the problems.

■ *Accountability* refers to the level of required decision-making authority and the impact that job-related decisions have on the organization.

As the job evaluation process establishes the relative contribution of work assignments, it creates a ranking order of jobs that are then placed into “job grades.” Each grade level is defined by a range of point values that groups jobs together in similar responsibility lev-

Table 2
IT key benchmark job descriptions

■ Website engineer
■ Data security specialist
■ Senior database analyst
■ Senior systems analyst
■ Network administrator (multiple platform LAN/WAN)
■ Network planning analyst
■ Database analyst
■ End-user computing support analyst
■ Senior programmer analyst
■ Systems analyst
■ Computer operator
■ Senior telecommunications specialist
■ Network administrator (single platform LAN/WAN)
■ Programmer analyst
■ Associate database analyst
■ Senior programmer
■ Network administrator (LAN)
■ Telecommunications specialist
■ Programmer
■ Personal computer maintenance technician
■ Associate programmer
■ Data entry operator

els. To ensure objectivity, the evaluation process focuses on the nature and requirements of the job, not the person doing it. This is *not* a measure of individual performance or seniority. The evaluation process also enables a more accurate comparison to similar size jobs in the market, rather than title comparisons, and allows for the pricing of unique jobs. The evaluation points for a job determine where it fits in the grade structure. Table 3 illustrates the relationships of job size, expressed in job grade, for the key benchmark IT jobs and medical library jobs.

From this comparison to compensation paid to IT professionals in health care organizations, we found, in general, that medical library positions were paid less than comparably sized health-care, information-technology positions when controlling for equivalent job size. These differences were more significant at lower-level job-content levels, and the pay gap narrowed as job size increased to director. Differences range between 13% and 40%. Figure 1 provides a graphic illustration.

This gap in pay is likely explained by several factors:

- A tighter supply and more demand for IT positions than medical library positions, which then resulted in subsequent pay premiums for IT-related jobs.
- Medical library professionals were not totally "immersed" in IT-related work as the average time spent in IT-related activities was approximately 25% for surveyed positions. We also found that most medical libraries in hospitals and academic medical centers relied heavily on their organizations' IT department.
- In addition, medical library professionals' experience and education base was still largely library science oriented rather than IT oriented. This could have a bearing on compensation differences between the two disciplines.

Attraction, retention, skill background, and compensation issues

Another area that we collected data on related to issues of attraction, retention, and skill backgrounds of IT-oriented medical library employees. Skill and education backgrounds, as well as the difficulties involved in attracting and retaining employees with these backgrounds, could have a definite impact on compensation paid to these professionals.

We used a scale of 1 (not an issue) to 5 (a major issue) in surveying participants' perceptions. We found that recruiting, retaining, and effectively compensating technology-savvy employees were important issues, especially for academic medical center library professionals. These issues were not perceived to be critical issues in hospitals. Recruiting and compensating professionals were viewed as more difficult problems than retaining this staff. Average response data for *academic medical centers* is provided below:

- issues regarding recruiting employees with adequate IT backgrounds or experience (3.9)
- issues regarding retaining employees with adequate IT backgrounds or experience (3.5)
- compensation issues causing difficulty in attracting or retaining employees with adequate IT backgrounds or experience (3.8)

Average response data for *hospitals* is provided below:

- issues regarding recruiting employees with adequate IT backgrounds or experience (2.4)
- issues regarding retaining employees with adequate IT backgrounds or experience (2.2)
- compensation issues causing difficulty in attracting or retaining employees with adequate IT backgrounds or experience (2.5)

We also collected data on the typical education and work experience backgrounds of medical library professionals. We found that the majority of employees with information technology skills typically had education and experience in library science rather than IT disciplines. There were some significant differences, however, between academic medical centers (i.e., more IT oriented) and hospitals (i.e., less IT oriented). Moreover, the data suggested that incrementally more medical library staff with IT backgrounds were leaving the medical library profession for other opportunities in IT disciplines.

The formal educational background of medical library employees performing IT-related work was also relatively high. Most employees providing IT-related services typically had either bachelor's or master's degrees. Job-related education requirements also usually had a bearing on compensation levels paid to incumbents. The most typical formal education degrees that medical library employees with adequate information technology backgrounds or experience possessed were:

- library science (79% academic medical centers, 69% hospitals)

Table 3
Comparison of job size using a common job evaluation program

Grade	Key benchmark IT jobs	Hospital medical library jobs	Academic medical center medical library jobs
22			Director of medical library (large)
21			Director of medical library (medium)
20			Director of medical library (small)
19	Website engineer	Director of medical library (large)	Associate/assistant director (large) Associate/assistant director (medium) Web services manager (large) Head of information systems (large) Head of collection development (large) Head of technical services (large) Head of resource center (large) Head of reference (large) Head of access services (large) Head of educational services (large)
18		Director of medical library (medium)	Associate/assistant director (small) Web services manager (medium/small) Head of information systems (medium/small) Head of collection development (medium/small) Head of technical services (medium/small) Head of resource center (medium/small) Head of reference (medium/small) Head of access services (medium/small) Head of educational services (medium/small)
17	Data security specialist	Director of medical library (small) Associate/assistant director (medium) Web services manager (large) Head of information systems (large) Head of collection development (large) Head of technical services (large) Head of resource center (large) Head of reference (large) Head of access services (large) Head of educational services (large)	
16	Network administrator (multiple)	Associate/assistant director (medium) Associate/assistant director (small) Web services manager (medium/small) Head of information systems (medium/small) Head of collection development (medium/ small) Head of technical services (medium/small) Head of resource center (medium/small) Head of reference (medium/small) Head of access services (medium/small) Head of educational services (medium/ small)	Systems librarian Education services librarian Catalog librarian Reference librarian
15	Network administrator (single) IT customer services analyst Programmer/analyst Associate database analyst	Systems librarian Education services librarian Catalog librarian Reference librarian	
14	Senior programmer Network administrator Telecommunications specialist IT customer service specialist Programmer		
13	PC maintenance technician		
12	Associate programmer		
11	Computer operator		
10	Data entry operator		

■ computer science or information technology (48% academic medical centers, 6% hospitals)

■ other (34% academic medical centers, 22% hospitals), including bachelor's degrees in variety of subjects, associate's degrees, and high school degrees with experience

The most typical work experiences that medical library

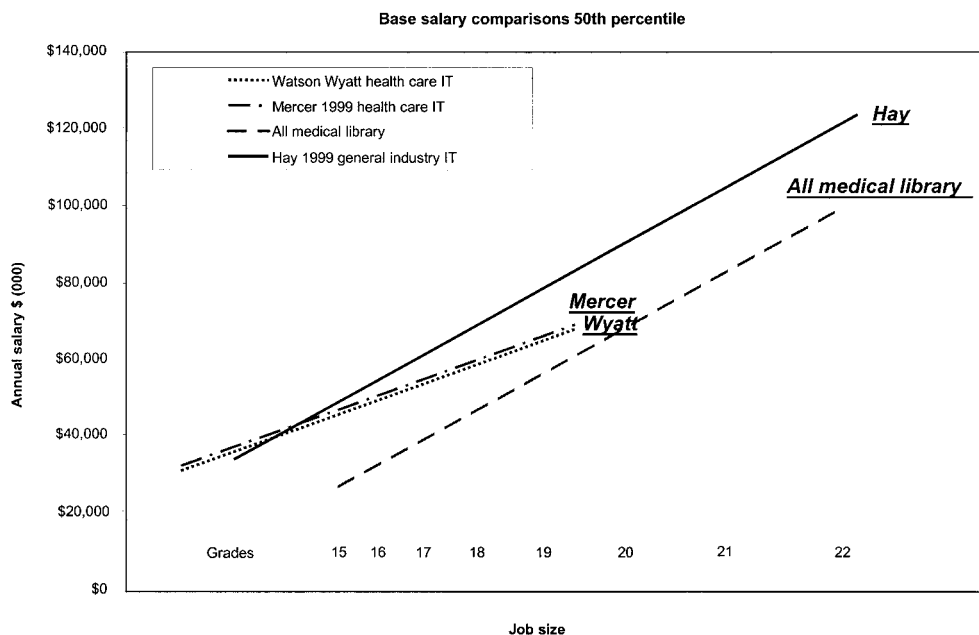
employees with adequate technology backgrounds possessed were:

■ medical library information (65% academic medical centers, 50% hospitals)

■ computer science or information technology (60% academic medical centers, 9% hospitals)

■ other work experience (35% academic medical cen-

Figure 1
Comparison of compensation practices



ters, 38% hospitals), including other libraries (public, corporate, specialty), business sector, teaching Medical library employees with adequate information technology background or experience typically left their current organizations for:

- other medical library positions (26% academic medical centers, 19% hospitals)
- nonmedical library IT positions (65% academic medical centers, 13% hospitals)
- other career opportunities (13% academic medical centers, 16% hospitals)

CONCLUSIONS

This study has shown that there are differences between medical library professionals and information technology professionals in terms of job design, skill, and education backgrounds. It also has shown that there is a gap in compensation between medical library professionals and IT professionals performing similar functions using information technology. Can we assume that this gap will disappear? Perhaps not, but it may be narrowing. *Library Journals'* 1999 placements and salary survey shows an increase in starting salaries for library graduates of 6.5% over 1998 [4]. This exceeds the typical average salary increase provided to the general public. Moreover, it shows that technology-intense library jobs such as Web manager or local area network (LAN) manager are compensated at higher levels than more traditional jobs such as

cataloger or reference librarian. Library management must pay more attention to job design and description—there are probably no professional positions in the library that do not have technology components

The most recent *Occupational Outlook Quarterly* projects that jobs for librarians will grow about 5% between 1998 and 2008 [5]. Technological skills improve both employment prospects and salaries for librarians. To be competitive with IT salaries, however, managers of medical library professionals will need to be ever more cognizant of the employment practices of IT professionals in nonmedical library disciplines.

A "1998 Hay Study of IT Attraction and Retention Issues" [6] identifies the drivers of attraction and retention for IT professionals. Given the changing role of the IT field and the employment dynamics surrounding this change, many IT employees have less loyalty to the institution or employer and more to themselves. Many employees desire short-term assignments utilizing new technology and seek more money, more recognition, and a new lifestyle. Recruiting and retaining these "new IT professionals" has placed more pressure on organizations to develop creative pay packages, market-based pay, career development opportunities, and cultures that support innovation. This analysis can provide meaningful insights for those hiring IT professionals in medical libraries.

The information presented in this report, as well as the results of the complete study from MLA, can be used to support best-practice or common-practice

analyses in the areas of hiring, staffing, retention, organization design, and job design. Of course, these data can also be directly used in benchmarking the competitiveness of medical library staff compensation.

Lastly, it is typically in the medical libraries' best interest to ensure that IT-related jobs, accountabilities, and capabilities of the medical library are known and understood by others, especially in the human resources and information technology staff departments. This knowledge will help ensure that employees with these backgrounds are identified and developed by the organization.

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ABOUT THE HAY GROUP

The Hay Group has been providing human resources management consulting services for more than fifty years, with particular experience in assisting clients with job measurement, compensation, and other human resource issues. Founded in 1943, the Hay Group pioneered the establishment of systematic job evaluation and has remained a worldwide leader in compensation and benefits planning and administration, human resource planning and development, organizational culture assessment, and organizational effectiveness. Hay Group's staff network, almost 2,000 consultants and technical specialists located in sixty-six offices in thirty-two countries, serves more than 9,000 clients around the world. The Hay Group is also a significant provider of compensation data to the health care industry, including premier surveys of executive compensation and benefits for integrated health care systems, physicians compensation surveys, and a comprehensive survey of hospital professional compensation conducted in conjunction with the American Hospital Association.

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APPENDIX A

Survey model position descriptions

1. **Director of medical library:** is responsible for managing and administrating library resources in support of educational curriculum, research, and patient care. This includes responsibility for the collection, care, accessibility, and dissemination of medical literature, as well as supplying services to faculty, students, and staff. Directors are responsible for developing new programs, preparing the budget and annual reports, maintaining statistics, providing for facilities' design and upkeep, formulating policies and procedures, staffing, organizing day-to-day operations, and promoting and interpreting the library to users and the outside community.
2. **Associate/Assistant director:** may oversee the activities of the various departments in the medical library, providing direction, issue resolution, advice, and consultation as required. This may be a multiple incumbent position, with each incumbent in charge of a particular function (i.e., systems, technical services, information services, access services). These positions carry out planning for major library initiatives and manage library projects. Associate/assistant directors assist library directors in various administrative functions such as budget planning, data analysis, purchase approval, facilities management, policies and procedures development, and day-to-day operations. Associate/assistant directors serve as acting directors in the directors' absence.
3. **Head of access services:** provides access to the resources of the library through the loan and copying of materials, document delivery, resource sharing, shelving, maintenance of stacks, provision of an environment that promotes information use and study, and diverse printing and reproduction activities. These positions provide timely, comprehensive customer service, prepare and collect statistics, analyze workflow, supervise paraprofessional staff, and represent the library on committees.
4. **Head of collection development:** is responsible for selecting, evaluating, and preserving library resources that support research, teaching, and patient care. This includes planning and implementing long-term strategies for the selection of library materials. These positions also manage the materials budget, conduct

evaluation studies, coordinate faculty selection, supervise paraprofessional staff, and represent the library on committees.

5. **Head of reference:** is responsible for directing in-house desk services and outreach programs that integrate the effective use of library resources into the curriculum for faculty, staff, and students. This includes supervising professional and paraprofessional staff and representing the library on committees.

6. **Reference librarian:** is responsible for meeting the information needs of the library's clientele by providing health sciences reference service. Reference service includes interpretation of the library collections, the online catalog, and other automated data systems. Reference librarians report to heads of reference.

7. **Head of educational services:** is responsible for coordinating and promoting the library's educational and outreach services and for enhancing the library's capacity to support teaching programs. This includes instructional programs in networking, information access and management, media and microcomputer services supporting teaching, and information and training programs.

8. **Education services librarian:** is responsible for providing reference service, information, and instructional services to clientele, and participating in other projects as assigned. These positions assist heads of educational services in coordinating and promoting the libraries' educational services. Education librarians report to heads of educational services.

9. **Head of resource center:** is responsible for cataloging, serials control, and binding of library resources. This includes supervising paraprofessional staff and representing the library on committees. These positions may also be responsible for planning and supporting use of instructional media, including selecting, acquiring, and implementing computer and audiovisual equipment and peripherals and instructional programs.

10. **Head of technical services:** is responsible for ad-

ministrating, managing, and leading the technical services department. This includes acquisition of information technology resources for library users, cataloging of all materials, maintenance and enhancement of the library databases, preparation of library material for use by the library's clientele, and physical preservation and maintenance of materials.

11. **Head of information systems:** is responsible for network services, public and education computing facilities, desktop automation, and technical support. This includes planning, developing, implementing, supporting, and managing all computer and network resources such as the online catalog system, databases, networks, and telecommunication systems. These positions also recommend equipment and software purchases, monitor technological developments, supervise professional and paraprofessional staff, and represent the library on committees.

12. **Systems librarian:** provides technical and operational support for the library's systems, including integrated library system (ILS), online bibliographic systems, CD-ROM networks, servers, etc. Incumbents install, configure, upgrade, and manage application software and library-specific software. They provide hardware and software support for staff and public workstations in the library, as well as coordinate technical support and serve as liaisons for the library to other technical departments in the campus. Systems librarians participate in selecting and evaluating hardware and software purchased by the library.

13. **Web services manager:** is responsible for the design, upgrade, enhancement, maintenance, availability, and effectiveness of technical functionality and content for the Website(s) of the library.

14. **Catalog librarian:** is responsible for cataloging, classifying, and processing monographs, audiovisuals, and other materials in the classed collections. These positions assign subject headings and call numbers to bibliographic records as needed, with special attention to original cataloging.

APPENDIX B

Sample survey section

Survey respondent information

Name of person completing survey: _____

Title: _____

Organization name: _____

Library name: _____

City, State, Zip code: _____

Telephone: _____

Email address: _____

Demographics

☐ Hospital

☐ Academic medical center

☐ VA hospital/medical center

☐ Other _____

Number of users served: _____

Number of staff (full-time equivalent) in medical library: _____

Number of FTEs supporting the IT function in medical library: _____

Typical formal education level of those employees supporting the IT function: _____

Information systems support (check all that apply)

- Medical library information systems are typically supported inhouse (i.e., by the medical library).
☐ Y ☐ N
- Medical library information systems are typically supported by the university (i.e., nonmedical library).
☐ Y ☐ N
- Medical library information systems are typically supported by the parent organization IT department.
☐ Y ☐ N
- Medical library information systems are typically supported by external contractors.
☐ Y ☐ N
- The medical library supports some non-medical library information systems for the organization.
☐ Y ☐ N

Organization of information systems support within the medical library

In the table below, please check which of the four groups is primarily accountable for the type of information technology work listed (medical library, IT department, contractor or outsourced, other). Additionally, if the medical library is primarily accountable, please indicate whether it is responsible for performing that IT work for the medical library only or if it is responsible for performing the work for the entire organization.

	Organization group				
	Medical library		IT department	Contractor or outsourced	Other (describe)
	For library only	For entire organization			
Computer help desk					
Desktop applications support					
Electronic mail support					
Electronic reserve system					
Hardware support					
Information database support (bibliographic full text)					
Institutional database support (HR, medical records, etc.)					
Instructional media support					
Integrated library system support					
Internet support					
IT training (software, office support)					
Network administration					
Programming applications design					
Systems operations					
Telecommunications					
Telemedicine technical support					
Web-based education support and development					
Web-based training					
Website development					
Other (describe) _____					

Information technology-related issues

Please indicate to what degree the items listed below are issues for your medical library.

- Ability to obtain adequate technology-related capital and operating budgets.
 Not an issue Somewhat of an issue Major issue
- Recruiting employees with adequate information-technology backgrounds or experience.
 Not an issue Somewhat of an issue Major issue
- Retaining employees with adequate information-technology background or experience.
 Not an issue Somewhat of an issue Major issue
- Compensation issues causing difficulty in attracting or retaining employees with adequate information-technology background or experience.
 Not an issue Somewhat of an issue Major issue
- Do medical library employees with adequate information-technology background or experience typically leave your organization for other medical library positions, for general information-technology positions (outside of the medical library field), or for other career opportunities?
 ☐ Medical library positions
 ☐ Information technology positions
 ☐ Other career opportunities, list other career opportunities: _____
- What formal education degrees do your medical library employees with adequate information-technology backgrounds or experience typically possess? (Check all that apply.)
 ☐ Master's library or information science
 ☐ Information or computer science
 ☐ Other degrees, list other degrees: _____
- What previous work experience do your medical library employees with adequate technology backgrounds typically possess? (Check all that apply.)
 ☐ Medical library
 ☐ Information technology or computer science
 ☐ Other work experience, list other work experience: _____

Position information

Please review the following model job descriptions and match the positions at your medical library to the appropriate model job. When you have determined your matches, please indicate which information-technology functions this position is responsible for in your organization. Check either "P" if the position has primary accountability or "C" if the position has contributory or supporting accountability for the function. Then please respond to the position information questions, such as what title is used, the number of people reporting to the position, the number of incumbents, the current base salary for this position, and the estimated percent of time this position spends on IT-related work. If you have more than one incumbent in a position, please indicate the average base salary for the position. Only complete information for positions that you can comfortably match to the model job descriptions.

Director of medical library

Description: The director is responsible for managing and administering library resources in support of educational curriculum, research, and patient care. This includes responsibility for the collection, care, accessibility, and dissemination of medical literature, as well as supplying services to faculty, students, and staff. The director is responsible for developing new programs, preparing the budget and annual reports, maintaining statistics, providing for facilities' design and upkeep, formulating policies and procedures, staffing, organizing day-to-day operations, and promoting and interpreting the library to users and the outside community.

Functional responsibility (check any that apply)

Computer help desk	<input type="checkbox"/> P	<input type="checkbox"/> C
Desktop applications support	<input type="checkbox"/> P	<input type="checkbox"/> C
Electronic mail support	<input type="checkbox"/> P	<input type="checkbox"/> C
Electronic reserve system	<input type="checkbox"/> P	<input type="checkbox"/> C
Hardware support	<input type="checkbox"/> P	<input type="checkbox"/> C
Information database support	<input type="checkbox"/> P	<input type="checkbox"/> C
Institutional database support	<input type="checkbox"/> P	<input type="checkbox"/> C
Instructional media support	<input type="checkbox"/> P	<input type="checkbox"/> C
Integrated library system support	<input type="checkbox"/> P	<input type="checkbox"/> C
Internet support	<input type="checkbox"/> P	<input type="checkbox"/> C
IT training (software, office support)	<input type="checkbox"/> P	<input type="checkbox"/> C
Network administration	<input type="checkbox"/> P	<input type="checkbox"/> C
Programming or applications design	<input type="checkbox"/> P	<input type="checkbox"/> C
Systems operations	<input type="checkbox"/> P	<input type="checkbox"/> C
Telecommunications	<input type="checkbox"/> P	<input type="checkbox"/> C
Telemedicine	<input type="checkbox"/> P	<input type="checkbox"/> C

Telemedicine technical support _____
 Web-based education support or development _____
 Web-based training _____
 Website development _____
 Other (describe) _____

<input type="checkbox"/> P	<input type="checkbox"/> C
<input type="checkbox"/> P	<input type="checkbox"/> C
<input type="checkbox"/> P	<input type="checkbox"/> C
<input type="checkbox"/> P	<input type="checkbox"/> C
<input type="checkbox"/> P	<input type="checkbox"/> C

Position information

What is your title for this position? _____
 Number of people reporting to this position (if applicable): _____
 Number of incumbents: _____
 Base salary (average if more than one incumbent): _____
 Percent of time spent in IT-related work: _____

[Editor's Note: The questionnaire continues asking the same sequence of questions as above for each of the model position descriptions listed in Appendix A.]

Thank you for your time and effort!

APPENDIX C

Participating organizations

Academic medical centers

Alamance Regional Medical Center (NC)	Miami Valley Hospital (OH)
Albert Einstein Healthcare Network (PA)	Monmouth Medical Center (NJ)
Arkansas Children's Hospital (AR)	Montefiore Medical Center (NY)
Arnot Ogden Medical Center (NY)	Moses Cone Health System (NC)
Albert Einstein College of Medicine (NY)	University of Arizona (AZ)
Cedars-Sinai Health System (CA)	University of Arkansas for Medical Sciences (AR)
College of Medicine, Pennsylvania State University (PA)	University of California at San Francisco (CA)
Creighton University (NE)	University of California, Davis (CA)
Duke University (NC)	University of Colorado Health Sciences Center (CO)
East Carolina University (NC)	University of Connecticut Health Center (CT)
Emory University (GA)	University of Florida (FL)
Erlanger Health System (TN)	University of Iowa (IA)
Harbor UCLA Medical Center (CA)	University of Iowa Hospitals and Clinics (IA)
Houston Academy of Medicine-Texas Medical Center Library (TX)	University of Kansas Medical Center (KS)
Indiana University School of Medicine (IN)	University of Maryland, Baltimore (MD)
Jersey Shore Medical Center, Meridian Health System (NJ)	University of Miami School of Medicine (FL)
Jewish Hospital College of Nursing and Allied Health (MO)	University of Michigan (MI)
Johns Hopkins University (MD)	University of Mississippi Medical Center (MS)
Kaiser Permanente Medical Center (CA)	University of Missouri at Kansas City (MO)
Kornhauser Health Science Library University of Louisville (KY)	University of Nevada School of Medicine (NV)
Louisiana State University Health Sciences Center-Shreveport (LA)	University of North Carolina at Chapel Hill (NC)
Loma Linda University Medical Center (CA)	University of Oklahoma Health Sciences Center, Tulsa (OK)
Loyola University Health System (IL)	University of Pennsylvania (PA)
MCP Hahnemann University (PA)	University of Pittsburgh (PA)
Medical College of Ohio (OH)	University of South Dakota (SD)
Medical College of Wisconsin Libraries (WI)	University of Tennessee (TN)
Mount Sinai School of Medicine (NY)	University of Texas Health Science Center at San Antonio (TX)
New York Medical College (NY)	University of Texas Medical Branch (TX)
New York University School of Medicine (NY)	University of Texas Southwestern Medical Center at Dallas (TX)
Northwestern University (IL)	University of Utah (UT)
Nova Southeastern University (FL)	University of Washington
Philadelphia College of Osteopathic Medicine (PA)	UNMC (ME)
SUNY Upstate Medical University (NY)	Vanderbilt University (TN)
Tufts University (MA)	Wake Forest University School of Medicine (NC)
UCLA (CA)	Washington University School of Medicine (MO)
University of Buffalo (NY)	Weill Medical College of Cornell University (NY)
	Yale University (CT)
	Yale-New Haven Hospital/Medical School (CT)

Hospitals

Atascadero State Hospital (CA)
Auburn Memorial Hospital (NY)
Banner Health Arizona (AZ)
Baptist Health Medical Center, Little Rock (AR)
Baptist Health Systems of South Florida (FL)
Beth Israel Medical Center (NY)
Buffalo General Hospital (BGH), Kaleida Health (NY)
Cabrini Medical Center (NY)
Carilion Health System (Va)
Cedars Medical Center (FL)
Cedars-Sinai Health System (CA)
Children's Hospital and Health Center (CA)
Children's Hospital of Michigan (MI)
Christiana Care Health System (DE)
Columbia Hospital (WI)
Community General Hospital (NY)
Community General Hospital of Sullivan County (NY)
Community Medical Center (PA)
Crittenton Hospital (MI)
Deaconess Billings Clinic (MT)
Denver Health Medical Center (CO)
Doctors Hospital Ohio Health (OH)
Eastern Maine Medical Center (ME)
Elmhurst Memorial Hospital (IL)
Emanuel Hospital and Health Center (OR)
Englewood Hospital and Medical Center (NJ)
Erlanger Health System (TN)
Foote Hospital (MI)
Freeman Health System (MO)
Heartland Regional Medical Center (MO)
Ingham Regional Medical Center (MI)
Institute for Health and Healing (CA)
JFK Medical Center (NJ)
Kaiser Permanente Medical Center (CA)
Kaiser Permanente Medical Center (CA)
Kingsbrook Jewish Medical Center (NY)
Lincoln Medical Center (NY)
Loundes (KY)
Lutheran Medical Center (NY)
Maimonide's Medical Center (NY)
Manatee Memorial Hospital (FL)
Maricopa Integrated Health System (AZ)
MedCentral Health System (OH)
Memorial Hospital of South Bend (IN)
Methodist Healthcare (TN)
The Methodist Hospital (TX)

VA hospitals

Department of Veterans Affairs (CA)
VA Gulf Coast Veterans Health Care System (MS)
VA Medical Center (CO)

Other

Allina Health System (MN)
Baptist Health Systems of South Florida (FL)
Connecticut Valley Hospital (CT)
Harrisburg State Hospital PA
Medical Library Center of New York (NY)

Naval Medical Center (CA)
New Hanover Health Network (NC)
Newton-Wellesley Hospital (MA)
Norristown State Hospital (PA)
North Memorial Health Care (MN)
North Mississippi Health Services (MS)
Northridge Hospital Medical Center (CA)
Nyack Hospital (NY)
Olive View Medical Center (CA)
Patton State Hospital (CA)
Providence Hospital and Medical Centers (MI)
Rahway Hospital (NJ)
Rainbow Babies and Children's Hospital (OH)
Rapid City Regional Hospital (SD)
Resurrection Medical Center (IL)
Riverside Healthcare System (IL)
Riverside Methodist Hospital (OH)
Rockingham Memorial Hospital (VA)
Saint Mary's (MI)
Salem Hospital (OR)
San Antonio Community Hospital (CA)
Sibley Memorial Hospital (DC)
Silver Cross Hospital (IL)
Somerset Medical Center (NJ)
St. Agnes Medical Center (CA)
St. Charles Mercy Hospital (OH)
St. Dominic-Jackson Memorial Hospital (MS)
St. Francis Hospital and Medical Center (CT)
St. Francis Medical Center (PA)
St. Joseph Hospital (IL)
St. Joseph Mercy-Oakland (MI)
St. Mary Medical Center (PA)
St. Vincent Health System (AR)
The Toledo Hospital (OH)
Trinity Medical Center (IL)
Tulsa Regional Medical Center (OK)
Union Memorial Hospital (MD)
University of California-San Diego (CA)
Valley Health Systems-Hemet Valley Medical Center (CA)
Via Health Rochester General Hospital (NY)
Wake AHEC (NC)
Washington County Health System (MD)
Washington Hospital Center (DC)
Washoe Medical Center (NJ)
Westmoreland Regional Hospital (PA)

VA Medical Center (TN)
Veterans Administration (NY)

National Institute of Health Library (MD)
Torrance State Hospital (PA)
University of Medicine and Dentistry of New Jersey (NJ)
Walter Reed Army Institute of Research (MD)